

light from one of:

a Q factor;
a bit error rate;
a spectrum shape; or
an eye opening; and

controlling the power of said input signal light so that said quality measurement is improved.

2. (Amended) A method according to claim 1, wherein said controlling comprises providing an optical amplifier amplifying said input signal light, and adjusting the gain of said optical amplifier.

7. (Amended) A device comprising:
a waveform shaper shaping a waveform of an input signal light to produce a shaped output signal light;
a quality selection module that obtains a quality measurement of said output signal light from one of:
a Q factor;
a bit error rate;
a spectrum shape; or
an eye opening; and
a power controller controlling the power of said input signal light so that said quality measurement is improved.

8. (Amended) A device according to claim 7, wherein said power controller comprises an optical amplifier amplifying said input signal light and a controller adjusting the gain of said optical amplifier so that said quality measurement is most improved.

9. (Amended) A device according to claim 7, wherein said power controller comprises an optical amplifier amplifying said input signal light, an optical attenuator attenuating an output from said optical amplifier, and a controller adjusting the attenuation of said optical attenuator so that said quality measurement is most improved.

16. (New) The method of claim 1, wherein the input signal is a wavelength division multiplexed signal.

17. (New) A method comprising:

shaping a waveform of an input signal light to produce a shaped output signal light;
measuring a Q factor of said output signal light; and
controlling the power of said input signal light to optimize the measured Q factor.

18. (New) A method comprising:

shaping a waveform of an input signal light to produce a shaped output signal light;
measuring a bit error rate of said output signal light; and
controlling the power of said input signal light to optimize the measured bit error rate.

19. (New) A method comprising:

shaping a waveform of an input signal light to produce a shaped output signal light;
measuring a spectrum shape of said output signal light; and
controlling the power of said input signal light to optimize the measured spectrum shape.

20. (New) A method comprising:

producing a shaped output signal from an input signal;
measuring an eye opening of said output signal light; and
controlling the power of said input signal light to optimize the measured eye opening.

21. (New) An optical repeater comprising:

an amplifier that amplifies a first signal to produce a second signal;
an attenuator that attenuates the second signal to produce a third signal;
an optical regenerator that shapes a waveform of the third signal to produce a fourth signal;
a quality monitor that measures a quality of the fourth signal; and
a controller that controls the attenuator to change a power level of the second signal and thereby optimize the measured quality of the fourth signal.

22. (New) A device comprising:

means for amplifying a first signal to produce a second signal;
means for attenuating the second signal to produce a third signal;
means for shaping a waveform of the third signal to produce a fourth signal;
means for monitoring a quality of the fourth signal; and
means for controlling the attenuation to change a power level of the second signal and
thereby optimize the quality measure of the fourth signal.

23. (New) An apparatus comprising:

means for shaping a waveform of an input signal light to produce a shaped output
signal light;
means for measuring a Q factor of said output signal light; and
means for controlling the power of said input signal light to optimize the measured Q
factor.

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24. (New) An apparatus comprising:

means for shaping a waveform of an input signal light to produce a shaped output
signal light;
means for measuring a bit error rate of said output signal light; and
means for controlling the power of said input signal light to optimize the measured bit
error rate.

25. (New) A method comprising:

means for shaping a waveform of an input signal light to produce a shaped output
signal light;
means for measuring a spectrum shape of said output signal light; and
means for controlling the power of said input signal light to optimize the measured
spectrum shape.

26. (New) An apparatus comprising:

means for producing a shaped output signal from an input signal;
means for measuring an eye opening of said output signal light; and
means for controlling the power of said input signal light to optimize the measured eye
opening.